calculating a bottomhole geometry, wherein the crater is removed from a bottomhole surface;

incrementally rotating the bit;

repeating the calculating of the crater parameters and the bottomhole geometry based on calculated roller cone rotation speed and geometrical location of the cutting elements with respect to rotation of the bit about its axis.

REMARKS

Please reconsider the application in view of the above amendments and the following remarks. The Applicants wish to thank the Examiner for careful review of the specification and claims.

Claims 1 – 28 were provisionally rejected under the judicially created obviousness-type double patenting doctrine. In accordance with the Examiner's suggestion, a terminal disclaimer, under 37 C.F.R. § 1.321(c), is submitted along with this response. Because the owner of Application No. 09/524,088 and the Applicant in the present application are one and the same, the terminal disclaimer is believed to be in compliance with 37 C.F.R. § 1.130(b). Accordingly, withdrawal of this rejection is respectfully requested.

Claim 22 was rejected under 35 U.S.C. §102 as being anticipated by the article *The Computer Simulation of the Interaction Between Roller Bit and Rock*, by D. Ma *et al.* Claim 22 has been cancelled. Accordingly, this rejection is considered moot.

Claims 23 – 28 were objected to as being directed to allowable subject matter but dependent on a rejected base claim. Claims 23 – 27 have been rewritten in independent form and are now allowable. Claim 28 depends from claim 27 and is allowable for at least the same reasons. These amendments are not made for any reason related to patentability and do not change the scope of the claims. Because these claims are directed to allowable subject matter and are now in independent form, the claims are allowable over the cited art. Accordingly, withdrawal of this rejection is respectfully requested.

CONCLUSION

Applicants believe this reply to be responsive to all outstanding issues and place this application in condition for allowance. Accordingly, Applicant requests favorable action in the form of a Notice of Allowance. If this belief is incorrect, or other issues arise, do not hesitate to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 05516.056002).

Respectfully submitted,

Date: 10/22/02

#46,079

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Marked-Up Version of Claims

23. (Amended) [The method as defined in claim 22 wherein the at least one design parameter comprises a parameter] A method for optimizing a design of a roller cone drill bit, comprising:

simulating the bit drilling through a selected earth formation;

adjusting at least one design parameter of the bit, the at least one design parameter comprising a parameter selected from the group of a number of cutting elements on each one of a plurality of roller cones, cutting element type, and a number of rows of cutting elements on each one of the plurality of roller cones;

repeating the simulating the bit drilling; and

repeating the adjusting and simulating until an optimized design is determined.

24. (Amended) [The method as defined in claim 22 wherein the optimized design is determined when] A method for optimizing a design of a roller cone drill bit, comprising:

simulating the bit drilling through a selected earth formation;

adjusting at least one design parameter of the bit;

repeating the simulating the bit drilling; and

repeating the adjusting and simulating until a rate of penetration of the bit through the selected earth formation is maximized.

25. (Amended) [The method as defined in claim 22 wherein the optimized design is determined when] A method for optimizing a design of a roller cone drill bit, comprising:

simulating the bit drilling through a selected earth formation;

adjusting at least one design parameter of the bit;

repeating the simulating the bit drilling; and

repeating the adjusting and simulating until an axial force on the bit is substantially balanced between the roller cones.

26. (Amended) [The method as defined in claim 22 wherein the optimized design is determined when] A method for optimizing a design of a roller cone drill bit, comprising:

simulating the bit drilling through a selected earth formation;

adjusting at least one design parameter of the bit;

repeating the simulating the bit drilling; and

repeating the adjusting and simulating until a volume of formation cut by the bit is substantially balanced between the roller cones.

27. (Amended) [The method as defined in claim 22] A method for optimizing a design of a roller cone drill bit, comprising:

simulating the bit drilling through a selected earth formation;

adjusting at least one design parameter of the bit;

repeating the simulating the bit drilling; and

repeating the adjusting and simulating until an optimized design is determined, wherein the simulating comprises:

selecting bit design parameters;

selecting drilling parameters;

selecting an earth formation to be represented as drilled;

calculating from the selected parameters and the formation, parameters for a crater formed when one of a plurality of cutting elements on the bit contacts the earth formation, the cutting elements having known geometry;

calculating a bottomhole geometry, wherein the crater is removed from a bottomhole surface;

incrementally rotating the bit;

repeating the calculating of the crater parameters and the bottomhole geometry based on calculated roller cone rotation speed and geometrical location of the cutting elements with respect to rotation of the bit about its axis.